

## CLAIMS

What is claimed is:

1 1. A method for use by nodes to route packet traffic through a multiple-hop  
2 wireless communications network, the method comprising:

3 detecting interference with packet-switched communications carried by  
4 radio frequency (RF) over the multiple-hop wireless communications network;  
5 and

6 adaptively determining, in response to information related to the detected  
7 interference, a route for transmitting packets through the multiple-hop wireless  
8 communications network that mitigates the effect of the interference on the  
9 packets.

1 2. The method of claim 1 further comprising the step of identifying a source  
2 of the interference to be a node in the multiple-hop wireless communications  
3 network, and wherein the adaptively determined route excludes the node.

1 3. The method of claim 1 further comprising the step of identifying one or  
2 more nodes interfered with by the interference, and wherein the adaptively  
3 determined route excludes one or more of the interfered-with nodes.

1 4. The method of claim 1 further comprising the step of approximating a  
2 geographical location of a source of the interference, and wherein the  
3 adaptively determined route excludes one or more nodes near that location.

- 1 5. The method of claim 1 wherein the step of detecting interference includes  
2 determining that signals received by a node are of an unauthorized protocol.
- 1 6. The method of claim 1 wherein the step of detecting interference includes  
2 determining that an address included in signals received by a node is an  
3 address of a known unauthorized source.
- 1 7. The method of claim 1 wherein the step of detecting interference includes  
2 determining that a protocol header included in signals received by a node has  
3 invalid information.
- 1 8. The method of claim 1 further comprising operating a protocol at a  
2 physical layer of a protocol stack that detects the interference.
- 1 9. The method of claim 8 wherein the step of adaptively determining a route  
2 is performed by a network layer protocol in the protocol stack in response to a  
3 notification from the physical layer protocol of the interference.
- 1 10. The method of claim 1 further comprising operating a protocol at a data  
2 link layer of a protocol stack that detects the interference.
- 1 11. The method of claim 10 wherein the step of adaptively determining a  
2 route is performed by a network layer protocol in the protocol stack in response  
3 to a notification from the data layer protocol of the interference.

1 12. The method of claim 1 further comprising operating a protocol at a  
2 network layer of a protocol stack that detects suspicious communication  
3 behavior.

1 13. The method of claim 12 wherein the step of detecting interference is  
2 accomplished by a physical layer protocol of the protocol stack in response to a  
3 notification from the network layer protocol of the suspicious network behavior.

1 14. The method of claim 1 further comprising adaptively adjusting an  
2 antenna pattern of a node in the wireless communications network in response  
3 to detecting the interference.

1 15. The method of claim 14 wherein the step of adaptively adjusting the  
2 antenna pattern includes forming a null in the antenna pattern in a direction  
3 of the interference.

1 16. The method of claim 1 further comprising disseminating to nodes in the  
2 multiple hop wireless communications network information related to the  
3 detecting of the interference.

1 17. The method of claim 16 wherein the disseminated information is an  
2 identity associated with a source of the interference.

1 18. The method of claim 16 wherein the disseminated information is an  
2 identity associated with a node in the multiple hop wireless communications  
3 network that is being interfered with by the interference.

1 19. The method of claim 1 identifying a source of the interference to be a  
2 node in the multiple-hop wireless communications network, calculating a cost  
3 function for a plurality of routes from a sending node to a destination node that  
4 exclude the interfering node, and selecting the route with a lowest cost  
5 function.

1 20. The method of claim 1 wherein the nodes in the wireless communications  
2 network operate according to one of the protocols selected from the group  
3 consisting of IEEE 802.11, BLUETOOTH, HYPERLAN and HOMERF.

1 21. A protocol stack for use by a node to communicate over a wireless  
2 communications network, the protocol stack comprising:  
3 a radio frequency (RF) physical layer for detecting signals that are  
4 attempting to interfere with packet-switched communications at the node, the  
5 RF physical layer producing a signal that indicates that interference has been  
6 detected; and  
7 a network layer receiving the signal from the RF physical layer and  
8 producing an alternate route of packets through the wireless communications  
9 network in response to the signal.

1 22. The protocol stack of claim 21 further comprising a data link layer for  
2 checking for errors packets received by the node and sending a signal to the  
3 network layer when interference has been detected.